



## PSS Case Book: A workbook in the PROTEUS series

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# #2

# PSS CASE BOOK

A workbook in the PROTEUS series



MAN Truck & Bus UK Ltd



BASF Automotive Refinish



Volvo Aero



1

**Maritime Branch Analysis** A deep dive into the maritime industry in Denmark, through the lens of our twelve partners companies. This report is the outcome of the descriptive explorative phase of PROTEUS. ISBN: 978-87-90416-87-4

2

## PSS Case Book

3

**PSS Readiness Manual** A self-assessment and guidance workbook, for a producer/supplier to begin to prepare the transition from product- to product/service-system development. ISBN: 978-87-90416-89-8

4

**PSS Tool Book** A catalogue of tried-and-tested tools and methods towards PSS development, with examples of implementation and a recommended methodology for application. ISBN: 978-87-90416-90-4

5

**PSS Organisation** A look at how to assess a company's PSS potential and description of important organisational capabilities, issues and actions for the PSS providing company. ISBN: 978-87-90416-91-1

6

**PSS Partnerships** A description of how partnering with suppliers and customers can enhance the effects and values of PSS offerings, including tools and techniques to use in establishing such partnerships. ISBN: 978-87-90416-92-8

7

**PSS Business Models** A step-by-step guide to the strategic planning and development of PSS solutions, providing a process-oriented view on PSS business model types. ISBN: 978-87-90416-93-5

# WHAT IS IN THIS BOOK?

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The intention with this workbook is to give some guiding examples of good practice within Product/Service-System (PSS) development. The Case Book is intended primarily as inspiration for industrial practitioners, with their core markets in business-to-business relationships. After a short introduction to PSS as a phenomenon and business activity, three company cases are described. For all three company cases four main elements are presented, providing important insight for a company about to embark on a PSS development: the case companies' motivations for developing PSS solutions; the companies' initial challenges with transitioning to PSS-oriented business; the PSS business models that each company now operates; and the particular PSS offerings that are developed, marketed and operated in each of the three companies. Finally a self-assessment tool, the *PSS Self Assessment Check* is provided enabling the reader to test whether the reader's business is suited for transition towards PSS.



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Party Officer 2nd Class Andrew Meyers, U.S. Navy



# THE PROTEUS INNOVATION CONSORTIUM



# INTRODUCING PROTEUS

## PREFACE

The vast majority of countries in the developed world are now dependent on their service sectors for between 70-80% of their gross domestic product. Even companies with decades of expertise in producing manufactured products are experiencing an increased need to understand before-, during- and after-sales service and have therefore embarked on business development activities that tightly combine product and service offerings in their portfolios. Closer customer contact, commoditisation of goods, total cost of ownership, and product liability are just some of the reasons for this transition. As yet there are only few systematic guidelines and instruments available to aid the development of servitised products. Therefore this series of workbooks. In this first workbook we present an industry sector of great importance and source of wealth to the Danish society, which is also experiencing and influencing a move towards intensified service integration into business- and product development activities. The workbook has been created by condensing the transcripts and the insights we have gained from a wealth of studies across the maritime branch, and it serves to provide a unique insight into a whole industry sector's readiness and first steps towards servitisation. Although this book is written primarily for our partners on the PROTEUS project, we are sure it can be a source of inspiration to a broad range of practitioners, policy makers, academics and students.

**Tim McAloone, PROTEUS Project Manager**

## WHAT IS PROTEUS?

The Danish Agency for Science, Technology and Innovation (DASTI) promotes and funds so-called innovation consortia, a novel constellation of research and innovation activities, involving industry, technical service companies and research institutions. The idea with innovation consortia is to promote the relationship between research and actual innovation activities in industry, resulting in both enriched research recognitions and applied industrial results. PROTEUS is one of DASTI's current innovation consortia, which focuses on the Danish maritime industry, particularly from the viewpoint of suppliers to the industry.

### THE INNOVATION CONSORTIUM'S FOCUS

The PROTEUS Innovation Consortium is working to jointly develop new knowledge about how after-sales service can be effectively integrated into business and product development in industrial organisations, so as to become a source of revenue and value, rather than a cost to the company. The company participants in PROTEUS are all from the maritime industry and are interested in understanding, through examples, how to effectively and systematically integrate service development into their product development and business creation processes.

### UNIQUE WITH RESPECT TO PSS

Current literature, tools and methods on Product/Service-Systems (PSS) include examples of procedures for the integration of product and service features in product development. However these approaches do not consider a number of key areas for business, such as the commercial considerations, the strategic organisational issues, or the possibilities of collaboration across the value chain. With its industry-wide consortium of companies, PROTEUS is in a unique position to begin to address some of these issues from a whole branch perspective.

### PROTEUS PROJECT IN DETAIL

The PROTEUS\* project is a 3 ½ year Innovation Consortium financed by the Danish Agency for Science, Technology and Innovation (DASTI). The consortium is formed by ten companies, a branch organisation, two research institutions and an engineering consultancy. The participating companies, mainly suppliers of equipment used in ship building, operation and maintenance, are: Alfa Laval Aalborg, Emerson Marine Tank Management Services, Hempel, Klinger DK, Lloyd's Register ODS, MAN PrimeServ Frederikshavn, NoreqActa, Novenco Fire Fighting, Pres-Vac Engineering, YIT. For further company information please see workbook #1 Maritime Branch Analysis. Danish Maritime is the branch organisation, where most of the participating companies are represented. The research institutions are DTU Department of Mechanical Engineering and CBS Department of Operations Management. Finally, IPU Product Development supports the project with its services in engineering consulting and methodology implementation.

\* The name of the consortium, **PROTEUS**, is an acronym for the research project title: "**PRO**duct/service-system **T**ools for **E**nsuring **U**ser-oriented **S**ervice". It is also an apt title, as it is the name of a mythological Greek sea-god, symbol of adaptability in the face of the changing nature of the sea.

---

***But  
what is  
PSS?***

**PRODUCT/SERVICE-SYSTEMS (PSS)** is an innovation strategy, where a greater integration of products and services has the potential to decouple business success and economic growth from mere product sales.

Instead of viewing a product as an isolated entity, the PSS design activity focuses on creating the right combination of products and services, needed to aid the customer in reaching their goal. Incorporating service thinking into the product development process gives rise to new business opportunities; the product has the opportunity of being made more robust throughout its life cycle (i.e. it is 'Designed for Service') and the customers' entire needs and activities are considered and catered for, from the very beginning of the development process. A PSS solution does not necessarily imply that the service provider is the producer of the physical product(s) included in the PSS, but the service provider must take responsibility for the delivery of the service to the customer, including its timing, physical elements, agreements and related risks. Examples of PSS are emerging in a broad range of markets, from Business-to-Consumer (B2C), through Business-to-Government (B2G) to Business-to-Business (B2B).

The following three company case examples are all categorised as B2B and are characterised by their high investment, long lifetime products, and by their aim to maintain tight customer relationships. As such these three case companies are very close to the PROTEUS companies in their business and their motivations for PSS – not least with respect to the challenges that they have experienced in transitioning to PSS.

Image courtesy of MAN Truck & Bus Ltd

“

“...Instead of having a reactive concept, we turned our business approach into a contracted proactive service support guarantee...”

*CEO MAN Truck & Bus UK Ltd*





## **CASE 1**

### **MAN TRUCK & BUS UK LTD**

# MAN Truck & Bus UK Ltd

## COMPANY DESCRIPTION

MAN Truck & Bus AG is the largest company within the MAN Group (with 54% of the total MAN Group revenue). MAN Truck & Bus UK Ltd. is a company within the commercial vehicle business area, with markets in Great Britain and Northern Ireland, and is a supplier of transport solutions within the product market of trucks (7.5 to 44t), heavy special-purpose vehicles (up

to 250t), plus city and intercity buses. The company's solutions span a comprehensive portfolio of product/service offerings, covering used-vehicles, rental solutions, fleet management and financing solutions, all of which are packaged in a tailored *Total Cost of Ownership* strategy for each customer. The UK company was established as a wholly owned subsidiary in 1992

and has since expanded its business area to the current 792 employees, a £650m (€815m) revenue, a market share of 12%, and an installed base of approximately 52,000 units. The company's revenue split is 30 % service (after-sales, spare-parts and used trucks) and 70 % products.

## PSS OFFERINGS DESCRIBED

MAN Truck & Bus UK Ltd. sells transport solutions to its customers (B2B); *solutions* that support the customer in the whole life cycle of their product ownerships. Through a Total Cost of Ownership (TCO) approach the sales organisation creates a package of products and services that are exactly tailored to the customer's needs, focusing on long-term need satisfaction, and using a TCO calculator in collaboration with the customer. The company sells transportation solutions that fix the cost per km, which is achieved through high product quality, aligned with the newest technology to minimise the customer's fuel consumption, thus helping the customer to decrease their consumption. Education programmes are offered to haulage companies' drivers, encouraging the drivers to drive economically, through training and motivation. MAN Truck & Bus UK Ltd. takes over the responsibility of total compliance with any legislation on the market and can furthermore act as a finance partner for its customers, through offering financing packages, to enable the customer's choice of the most suitable solutions throughout ownership and use – not just in the purchase situation. The company's business approach is based on Cost, Compliance and Credit.

MAN Truck & Bus UK Ltd. has moved from competing on lowest cost, to best value for the customer. In addition to these extensive TCO-based service offerings, the company's service portfolio also covers spare-parts and R&M (repair & maintenance) packages. R&M packages are bundles of MAN Truck & Bus UK Ltd.'s various maintenance and service propositions. Finally the company also offers extended warranty, 24-hour assistance, roadside assistance, scheduled preventive inspection checks, legally enforced vehicle-testing and fleet management services.

**Mobile24** | Service 24hr + roadside assistance cover

**Genuine Parts** | Quality and reliability of parts

**Comfort service** | Tailor made service contracts. Scheduled maintenance and repair packages.

**Service card** | Cashless payments for repair, maintenance and replacements parts

**Bus Top service** | Premium service package for NEOPLAN buses

**ProfiDrive®** | Training of drivers

**Fleet management** | Driver efficiency reports, fuel consumption, documentation

**Communication** | Packages of onboard communication and navigation systems

**TeleMatics®** | Data to optimise vehicle deployment and make the transport process transparent

**Finance** | Tailor-made solutions for Finance, Leasing and Insurance

**Rental** | Rental trucks + operational benefits (service packages)

**TopUsed** | Sale of Used vehicles

“

...We sell a value proposition based on a Total Cost of Ownership approach - we do not just sell a product... we sell a guaranteed cost per km...

CEO MAN Truck & Bus UK Ltd

**FACTS: 2011 / MAN Truck & Bus UK Ltd**

**MAN Truck & Bus UK Ltd**

Employees: 792

Revenue: £650 Mill / €815Mill

Market share Europe: 12 % UK

Installed based: 52.000 (10.000 under contract)



# MAN Truck & Bus UK Ltd

“

...One of the largest challenges in moving from a manufacturing company to a service-oriented company has been to change the internal mindset in the company and that of the customers. In addition to the establishment of a sustainable service network we have satisfied dealers, we made the dealers profitable...

*CEO, MAN Truck & Bus UK Ltd*

## HOW DID THEY DO IT?

MAN Truck & Bus UK Ltd. has taken the journey from a solely product manufacture and sales company of trucks and busses to a transport solution provider; this transition process to a service-oriented company took over ten years. The company started the transition in 2000 through two revolutionary elements:

- By introducing a new electronic tracking and diagnostics technology (Trucknology®), a digital canvas of information became available to MAN Truck & Bus UK Ltd., upon which the company could gather information for servicing.
- A direct sales-force initiative (called MAN DIRECT) was created, which incurred a significant change in the dealer network's focus areas from service and sales, to solely focusing on service. This was achieved by educating dealers and establishing a controlled service network.

MAN Truck & Bus UK Ltd. continued with a thorough reorganisation of the company, implementing a performance measurement system for dealers (service workshops) by developing the so-called Up Time Principle (UTP). The UTP took its point-of-departure in a customer survey, enquiring about the notion of "key service", which resulted in 5 KPI's for service. Thereafter a reward system was created, whereby MAN Truck & Bus UK Ltd. assigned revenue to its dealers, dependent on the dealers' accomplishment of each of the five KPI's. At the same time, a so-called Dealer Satisfaction Index (DSI) was created, in order to ensure a mutual evaluation and improvement of the relationship between MAN Truck & Bus UK Ltd. and its dealers. The sales organisation underwent a competence lift, where employees were educated as consultants in business strategies, as opposed to their former role, as product sales people. Today the company sells every contract through their TCO calculator interface, in collaboration with the customer.

## MARKET SEGMENTS



Trucks



Buses

## BUSINESS MODEL

Changing the business focus towards continued relationships with the customers "selling guaranteed cost per km" has also resulted in various new revenue streams for MAN Truck & Bus UK Ltd. For example, the company now offers various financial solutions such as: Operating Lease (specific project over a period); Finance Lease (rental solutions); Contract Hire (fixed fee for a period of time); Hire Purchase (renting and buying); Triple Choice (a mix of the above); MAN Insurance (single vehicle or multiple). The company has an installed base of approx. 52,000 units of which 10,000 are under contract, and subsequently 50-60 % of which are under a finance contract. Although the company's revenue split is 70 % on products and 30 % (including used vehicles) on service items, when looking at profitability, the split is just the opposite.

## MOTIVATION

Further motivation for MAN Truck & Bus UK Ltd. for transitioning to a more service-oriented business was strengthened due to a customer satisfaction survey that showed that they were the least satisfying company in their field, in 2006. This same survey highlighted service as the largest theme, seen from their customers' viewpoint.

## CHALLENGES

The largest challenge in this ten-year transition period has been the cultural change within MAN Truck & Bus UK Ltd. The organisational structure has had to change, both internally (creating a new development organisation and training business consultants as opposed to sales people), and externally (towards dealers and customers). A further challenge in this transition period has been to change the mindset of the customer from a one-time product purchase relationship to a TCO understanding. To support this new service-orientation, the sales organisation needed an information system similar to a customer relationship management (CRM) system, but tailored to after-sales. This need was a challenge to meet, but solved partially by a tracking software that the company calls "E-Workshop", where all data (maintenance reports, legally enforced vehicle-testing etc.) from dealers are collected, for use by the sales force. The challenge of raising the competence level of internal service technicians was met by the development and deployment of the UTP system, which is currently planned to be implemented across other MAN Truck & Bus divisions.

# NEW TRUCK 10%

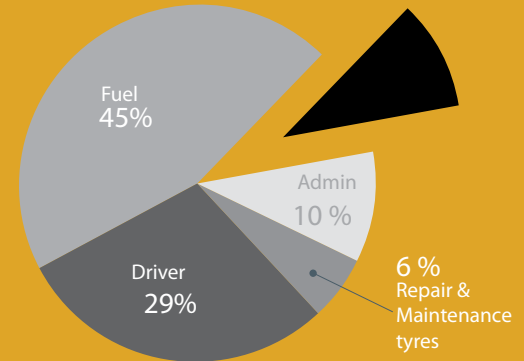


Figure 1: Illustration of the Total Cost of Ownership for a truck. The sales price of a truck is only 10 % of all expenses during a total product life cycle.

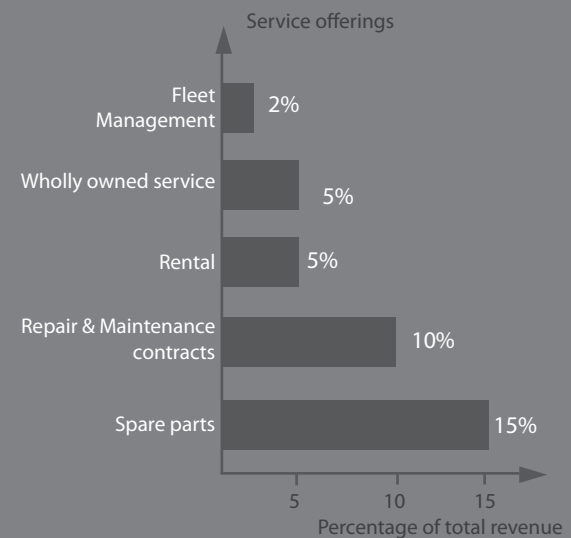


Figure 2: Illustration showing the service revenue split as a % of total company revenue

## Cultural check list:

- Readiness
- Capacity
- Competence
- Commitment
- Speed
- Accuracy

Figure 3: Cultural check list, considerations before starting a transition towards PSS oriented business



“

...there are five major players on the market, and coating has almost become a commodity... that's why we started thinking of: *what can we do to differentiate ourselves from the rest...* the RATIO Concept Plus was the first step into this service and consulting concept, where we offer our customers something more than just the product...

Nordic Marketing  
Manager, BASF Coatings  
Services AB

Photo: [www.glasurit.com/dk](http://www.glasurit.com/dk)

## CASE 2

### BASF

### AUTOMOTIVE

### REFINISH

“

...we went from being can-kickers to suddenly having to sell these solutions. It was an enormous readjustment for our entire organisation...

*Nordic Marketing Manager,  
BASF Coatings Services AB*

# BASF Automotive Refinish

## COMPANY DESCRIPTION

The BASF Company started out in 1865 and is one of the largest chemical companies today. Its present in 80 countries and employs 110.000 people. In 2011 it had an annual revenue of €73.5 billion. The company offers a large array of products and services in a range of segments such as plastics, chemicals, oil and gas, agricultural, and functional solutions. The focus in this case however, will be on the Auto-

motive refinish coatings part of BASF coating division. BASF Automotive Refinish is a department in BASF that has a long history of producing and selling coating for automotive refinish workshops.

Besides producing and selling coatings for collision repair, commercial fleet, and automotive specialty markets, it offers a large array of technical training programmes, business man-

agement courses, IT colour system solutions, as well as workshop audit and design. BASF Automotive Refinish can be said to be the aftermarket for BASF Automotive OEM coatings, that produce and sell coatings for the automotive producers, and these two departments have a close collaboration.

## PSS OFFERINGS DESCRIBED

In 2002 BASF Automotive Refinish launched RATIO Concept Plus, a comprehensive consultancy solution that supports all major parts of the customer's business. RATIO Concept PLUS includes individual or standard consultancy, workshop design and profit management, combined with a number of available business courses. With the RATIO Concept Plus, BASF Automotive Refinish took a major step from solely being coating supplier to becoming a business partner.

It offers advice to its customers on how to improve their automotive refinish workshop, by analysing possibilities for expansion, optimisation of workflow and processes and what competencies are needed for the various solutions. The company has also expanded its product portfolio to include equipment for the workshop, which ranges broadly – from car lifts to safety masks. When a customer has a new workshop designed or redesigned, BASF Automotive Refinish can also offer the necessary products for that design, a business activity with which the company has had great success. Sales of ancillary products account for almost one third of BASF Automotive Refinish's revenue.

BASF Automotive Refinish is constantly developing and adapting its PSS solutions to change with the market and user needs. This attention to user needs has led to the development of a series of introductory business classes. These classes have been specifically developed to focus on management of refinishing workshops and the day-to-day challenges that its customers are likely to face in operating their workshops.

**Bodyshop Audit** | Analysis of application process and action plan for operational improvement.

**Customer business courses** | Marketing, personal management, and profit management.

**Customer training** | Three different levels of training in coating application.

**RATIO Color system** | Internet database with search and query options and calculation of mixing formulas.

**RATIO Scan II** | Transportable color measuring device connectable to PC and color program.

**Color Profi System** | Tri-annual updated color samples with patented filing system.

**Classic Car Colors** | Webpage with search and help options specifically for vintage cars.

“

...our sales personnel are present at the business courses, this makes the customers more comfortable... and it creates some incredible customer relationships that are invaluable...

*Nordic Marketing Manager,  
BASF Coatings Services AB*

**FACTS: 2011 / BASF**

Employees: 111.000

Revenue: 73,497 Mill EUR

Growth in revenue: 15,1 %



# BASF Automotive Refinish

“

...the key to implementing this [PSS] correctly lies in the way it is communicated. We had it presented in a bit too grandiloquent and academic way that was difficult to relate to our daily dealings...

*Nordic Marketing Manager,  
BASF Coatings Services AB*

## HOW DID THEY DO IT?

With the RATIO Concept Plus, BASF Automotive Refinish moved from being a coating supplier to being a partner to its customers. This process began in 1982 with the RATIO Concept which systematically matched and combined its products to optimise the customers' processes and work flow. Through the years, BASF Automotive Refinish's interactions with the customers have created a very loyal customer base and a close collaboration between the parties. It is through this close relationship that BASF Automotive Refinish has developed a thorough understanding of the customers' needs, which has been essential for the launch of the RATIO Concept Plus.

To sell the new RATIO Concept Plus a comprehensive set of new skills was needed inside the organisation. Instead of merely selling coatings the BASF Automotive Refinish representative should be able to consult on and sell workshop design, machinery and business thinking. For this the company established a three-year education programme for a selected number of suitable employees. With the new offer of workshop design BASF Automotive Refinish increased its offer portfolio to include equipment for the workshop, so the customer was able to order the equipment directly when deciding on the design.

BASF Automotive Refinish has since developed a number of training and business course offers for its customers. For the development of these courses the company hired in experts in business coaching and organisational development, to integrate BASF Automotive Refinish's expertise and customer knowledge into a set of tailor-made courses for its customers.

## MARKET SEGMENTS

BASF Automotive Refinish's customers are refinishing workshops in the automotive industry. The company has a high technical knowledge, but many are small start-up companies that have grown from a one man activity to a company with 15 or more employees.

Many of these customers face the challenge that they have never been trained in the operation and growth of a paint shop, and thus lack competencies in areas such as marketing, personnel management, profit management, workflow processes, and workshop design. It is through close interactions with the customers that the PSS solutions and a profound sense of loyalty from the customers have been established.



## BUSINESS MODEL

BASF Automotive Refinish is able to charge for all of its service offers, but has kept the cost of these low for its customers. The services are a means for the company to differentiate itself from its competitors and increase sales of coating and ancillary products, which is where the profit is made. The business model is also linked with that of the OEM automotive coating. The OEM automotive coating segment is part of the foundation on which BASF Automotive Refinish can focus its business. Likewise, the OEM segment also depends on the refinish business in an effort to sell its products, as it is an important aspect for its customers. Therefore, even though the main profit is generated in the aftermarket, all the new sales activities are essential for the presence on that market.

## MOTIVATION

BASF Automotive Refinish was one of five market-leading companies to compete on products that were becoming a commodity. The company was challenged to find new ways to compete and differentiate itself from its competitors. Through its close collaboration with the customers BASF Automotive Refinish identified a new market potential and a concept that would allow the company to sell ancillary products. RATIO Concept Plus secures market shares, creates customer-lock-on and new revenue streams.

## CHALLENGES

The biggest challenge has been to alter the mindset of the company's own workers and in particular sales personnel. If a sales person is going to sell integrated workshop solutions and supporting business solutions instead of coatings, the salesman has to be able to see the benefits for the customer of these new offerings. Therefore the sales personnel need to be convinced that the solutions are a good idea before they can convince the customers.

## FACTS: 2011 / BASF Coatings division

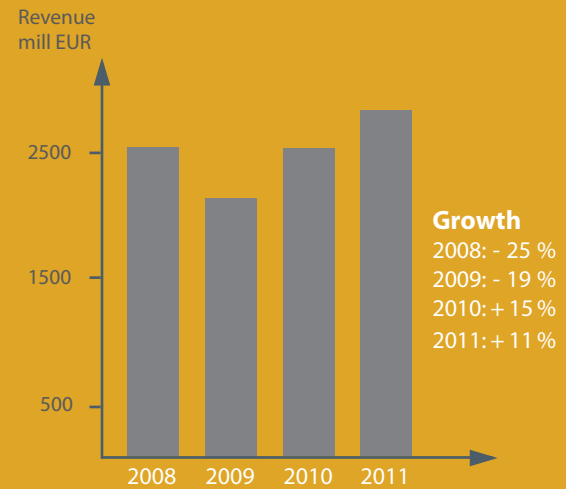


Figure 4: Revenue and growth for BASF Coating

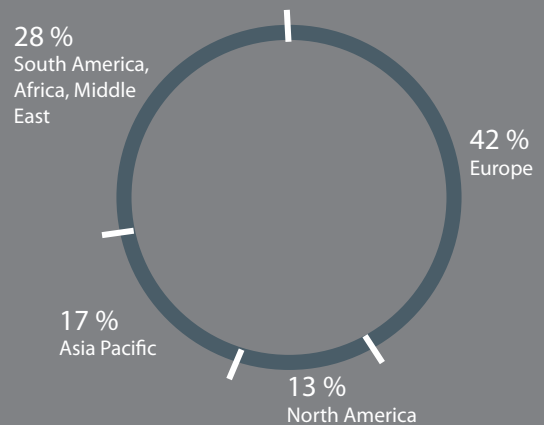


Figure 5: BASF Coatings - Sales by region. Total revenue for coatings: 2,800 mill EUR

## Step-by-step - making your bodyshop efficient

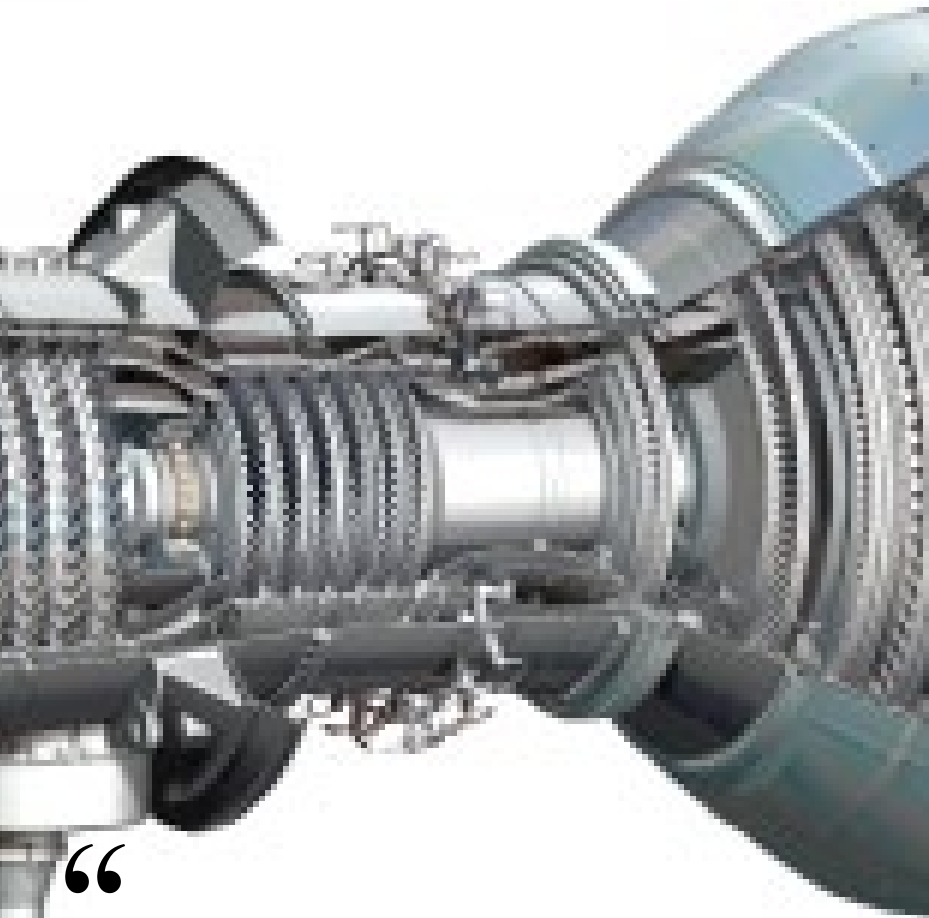
- **Analysing your needs**
- **Identifying capacities**
- **Creating a virtual 3-D Model**
- **Using the model to analyse and optimise your plans**
- **Calculating costs**

Figure 6: BASF Automotive Refinish approach for optimising processes and workflow in a workshop



## CASE 3

### VOLVO AERO



“

... our products typically have a 30 to 50 year life span ... We're making our money now on components that were designed and produced in the 80's and the 90's ...

*Senior specialist - Product development,  
Volvo Aero*

# Volvo Aero

## COMPANY DESCRIPTION

Volvo Aero is a subsidiary company of AB Volvo, employing 2,900 staff and contributing with 2% of AB Volvo's revenue. As both a supplier and OEM to the aviation industry, Volvo Aero develops and produces highly advanced components for aircraft engines, rockets, and gas turbines. The foundations for the company were laid in 1930 with an order of 40 aircraft engines for the Swedish Air Force, and

it was through their development work for the Swedish Air Force that Volvo Aero commenced its collaboration with Rolls-Royce in 1952. The establishment of close collaborations with commercial aircraft engine producers has continued, covering Garrett, GE and Pratt & Whitney, where Volvo Aero is today component supplier and partner. Volvo Aero has man-

aged to become a partner in almost all engine programmes, specialising in shafts, spools and cases.

All of Volvo Aero components enjoy a majority market share in their respected segments. Today Volvo Aero engine components are present on more than 90% of all new larger commercial aircrafts (aircrafts with more than 100 passengers).

## PSS OFFERINGS DESCRIBED

When Volvo Aero becomes component supplier to an OEM of commercial aircraft engines, it enters into a partnership that shares not only development activities, but also the associated risks and revenues throughout the product life cycle. Such risk and revenue sharing partnerships account for the vast majority of Volvo Aero's component sales. When the OEM offers its customer a PSS solution Volvo Aero becomes a part of the delivery system for the solution, all the way from the early design through to supporting the product through life.

Volvo Aero's own product development process needs to be agile, as questions such as "what would happen if we just moved this part 5 mm?" often arise. Such small changes have great effects on other components, especially as they must be designed for easy accessibility and maintenance throughout the product life. Volvo Aero is continuously developing and improving methods and systems support that enable decision making during product developing – taking life cycle aspects into account.

One example is a tool able to simultaneously take into account various development, manufacturing and service aspects and it considers hardware, manufacturing and maintenance alternatives. To ensure full integration into product development, Volvo Aero's tool can interact directly with their engineering systems (e.g. CAD, CAE) with which the company's products are designed and developed.

**Aircraft engines** | The RM12 engine for the Swedish military Gripen fighter.

**Engine components** | Fan and compressor structures, compressor rotors, combustor structures, low pressure turbine cases, turbine structures, shafts, and fan/compressor cases.

**Vanes** | Turbine nozzle guide.

**Space propulsion Nozzels** | Radiation cooled sheet metal nozzles, supersonic injection cooled nozzles, dump cooled nozzles, regeneratively cooled nozzles.

**Space propulsion turbines** | Sub-, trans- and supersonic turbines of both blade and blisk type.

“

...jet engines are developed in partnerships between the OEM and key suppliers, sharing risk, costs and revenue...

*Industrial PhD Researcher, Luleå Tekniska Universitet /  
Volvo Aero*

### **Volvo Group**

Employees: 100.000

Revenue: 36,612 Mill EUR

Growth in revenue: 17 %

Growth in operation income: 49 %

### **Volvo Aero**

Employees: 2904

Revenue: 767 Mill EUR

Growth in revenue: -16 %

Growth in operation income: + 17,5 %





# Volvo Aero

“

... we need to understand the OEM's business model, and align our business model to be successful...

*Senior specialist - Product development,  
Volvo Aero*

## HOW DID THEY DO IT?

Since its establishment in 1930, Volvo Aero has had a close collaboration with the Swedish Air Force, taking responsibility of their aircraft engines through their entire life cycle. Through this collaboration with the Air Force, the concept of creating revenue from the entire product life cycle was instilled in the company from the very beginning.

Approximately 15 years ago, Volvo Aero decided to commit to and invest in a PSS strategy on other markets than military. The PSS oriented business model emerging on the market required a shift in thinking and acting. One measure taken was to intensify research collaboration with several research institutes and universities. It was important to gain understanding and find new methods, tools, and not at least developing knowledgeable people in what PSS implies for component manufacturing.

Volvo Aero has later hired many of the researchers that have done research in collaboration with Volvo Aero, since they already had knowledge about the technologies and products, plus the mindset of developing solutions for entire product life cycles. Thereby Volvo Aero has created a workforce of engineers that are experts in generating PSS solutions.

## MARKET SEGMENTS

Volvo Aero sells products to the military and the space industry, but their primary market is currently engine components for larger commercial aircrafts. Its customer base is limited, as there are only three engine manufacturers for larger commercial aircrafts. With only three possible customers, a good customer relationship is of course crucial. Volvo Aero has had partnering activities with the engine OEM since the 1950's and 1970's. A long and productive collaboration is essential when the risks and revenues are shared over a product life time of 30 years.

## BUSINESS MODEL

Volvo Aero operates from a range of business models, the choice of which depends on its role. If the company is a supplier for an OEM it must comply with the OEM's business model, which the OEM negotiates with the customer. This usually results in a division of the revenue and the cost between the parties, e.g. Volvo Aero pays 5% of the cost and gains 5% of the revenue. This is negotiated for each individual project and the rate is determined by the number of components and risks involved. When Volvo Aero is the OEM it has the possibility to maintain the entire system and negotiate the business set-up with the end customer directly.

## MOTIVATION

The aero industry was one of the first where the OEMs overtook the responsibility for and maintenance of the product (the engine, in this case). An engine failure in operation could cost many lives and destroy businesses. As a supplier to engine producers, such as Rolls-Royce that is famous for selling "power by the hour", Volvo Aero must fit their business model to that of the OEM. Volvo Aero's very origin was based on the whole life cycle support of its components and products, so the potential of creating revenues from the entire product life cycle were apparent since the company's beginning.

## CHALLENGES

When it comes to PSS, the number one challenge Volvo Aero has encountered has been its role in the supply chain. When the company is the OEM it is easier to deliver PSS solutions through to the customers and gain the life cycle revenues. When it is supplier to the OEM it has to comply with the OEM's business model and negotiate a mutually financial beneficial agreement on revenue and cost. When it is the supplier it also loses the direct interaction with the end-users and providing life cycle services need to be aligned with the OEM's life cycle service packages. Another challenge for Volvo Aero has been the culture and legacy inherent in the company. Even though Volvo Aero has worked towards a PSS strategy now for 15 years, the most visible role for the organisation is still to deliver the physical components to the OEM first hand. Life cycle services, challenges and opportunities becoming important well into the engine programme, are still difficult to relate to during development – despite the progresses made.

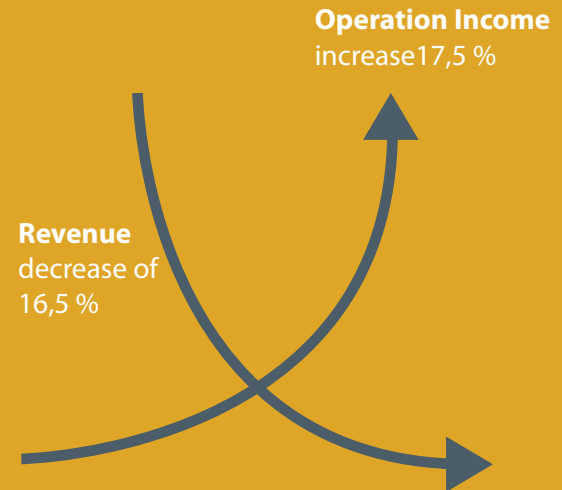


Figure 7: Revenue vs. operation income 2010-2011



90 % of all new large commercial aircrafts have Volvo Aero components on board

Figure 8: Market share 2011

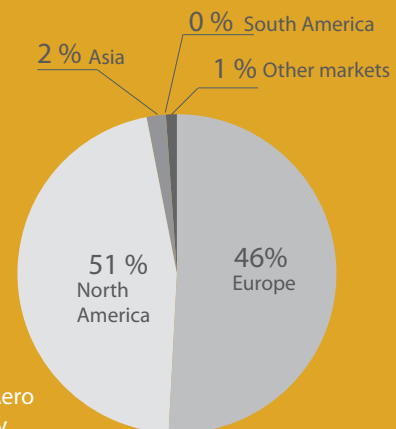


Figure 9: Volvo Aero net sales 2011 by region.

Alan Cleaver, Flickr.com/alancleaver (CC BY-SA 2.5)



# PSS SELF ASSESSMENT CHECK

The Self Assessment Check is an extensive set of questions for the service providing or service aspiring company to assess their current offerings or unseen potential. It has been constructed to investigate and describe the essential parts of a PSS providing company, and has been used as checklist in researching the three case companies.

The Self Assessment Check is meant to help you ask the right questions of your business. It is meant to be a basis for a discussion of the current situation and to give ideas for potential new opportunities. Where appropriate, some points have been supplemented by additional questions or suggestions.

Hopefully, using the tool will help you to understanding how a PSS works or would work in your company.

## Introduction

Company description	
Customers and customer segments	
Market share	
Competitors	

Summary and motivation	
Make a short summary of your company's current/past offerings and service areas	
How can you characterise your main motivation for your current PSS venture?	<input type="checkbox"/> <i>Closer collaboration with customer</i> <input type="checkbox"/> <i>We have the hope of new revenue streams</i> <input type="checkbox"/> <i>New potential revenue streams have already been identified</i> <input type="checkbox"/> <i>In order to take more responsibility of our product in use</i> <input type="checkbox"/> <i>Because the competitor is already doing it</i> <input type="checkbox"/> <i>To stay a step ahead of the competition</i> <input type="checkbox"/> <i>To change our position in the value chain</i>
Overall description product- and service range	



## Your PSS concept - how will it make money?

Customer Segments	<p><i>For whom is the offering creating value?</i></p> <p><i>Who are the most important customers?</i></p>
Why will the customers buy the offering? (value proposition of a chosen offering)	<p><i>Value delivered to the customer?</i></p> <p><i>Which customer's problem is helped?</i></p> <p><i>What bundles of products and services are offered to each Customer Segment?</i></p> <p><i>Which customer needs are satisfied?</i></p>
What considerations have been made with regard to the customer relationship?	<p><i>What type of relationship does each customer segment expect?</i></p> <p><i>Which relationships are already established?</i></p> <p><i>How will they be integrated with the rest of the business model?</i></p> <p><i>What will the financial ramifications of these relationships be?</i></p> <p><input type="checkbox"/> <i>We expect to incur a cost from maintaining customer relationships</i></p> <p><input type="checkbox"/> <i>We will charge to cost price, thus providing a service at break-even</i></p> <p><input type="checkbox"/> <i>Our relationships will be charged to the customer as a part of our business and revenue model</i></p>

<p>How will customer activities be managed and supported?</p> <p>In which areas will you interact with the customers?</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <i>Design/Development (i.e. we will co-design PSS solutions with our customer)</i></li> <li><input type="checkbox"/> <i>Operation of the PSS</i></li> <li><input type="checkbox"/> <i>Finance (i.e. we will provide financing models based on the TCO of the PSS)</i></li> <li><input type="checkbox"/> <i>Training</i></li> <li><input type="checkbox"/> <i>Support (Hotlines, maintenance teams etc.)</i></li> <li><input type="checkbox"/> <i>Monitoring (e.g. control centres, regular checks)</i></li> <li><input type="checkbox"/> <i>Optimisation (e.g. constant performance improvements of the delivered system)</i></li> <li><input type="checkbox"/> <i>Consulting</i></li> </ul>
<p>How will offerings be managed or supported through product life cycle?</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> <i>Installation – we can offer to do this for the customer</i></li> <li><input type="checkbox"/> <i>Customer-passive use – we will operate the system on behalf of the customer</i></li> <li><input type="checkbox"/> <i>Customer-active use – we will assist the customer's own operation of the delivered system</i></li> <li><input type="checkbox"/> <i>Maintenance – we will aid or overtake the maintenance of the system</i></li> <li><input type="checkbox"/> <i>Repair – we will carry out repairs within an agreed contract period</i></li> <li><input type="checkbox"/> <i>Upgrade – we will offer to provide constant upgrades to the product, during an agreed operation period</i></li> <li><input type="checkbox"/> <i>Reclaim – we will take back the product/system when the customer has finished with it</i></li> <li><input type="checkbox"/> <i>Disposal – we will take responsibility for the disposal of the product/system</i></li> </ul>

What will be the availability of the PSS offering?	<input type="checkbox"/> <i>Always available for the customer</i> <input type="checkbox"/> <i>Available at the customer when needed (serial use)</i> <input type="checkbox"/> <i>Available at certain times or places</i>
Considering how to reach the customer:	<p><i>Through which channels do you intend to reach your customer segment?</i></p> <p><i>How are you reaching them now? And which ones work best?</i></p> <p><i>Which channels are most cost-efficient?</i></p>
What considerations have been made with regard to resource efficiency?	<input type="checkbox"/> <i>Our PSS will minimise the consumption of the product</i> <input type="checkbox"/> <i>Our PSS will lead to minimise use of the product (or of products generally)</i> <input type="checkbox"/> <i>Our PSS will increase utility of the product</i> <input type="checkbox"/> <i>Our PSS will prolong the product's utility period (i.e. lifetime)</i> <input type="checkbox"/> <i>Our PSS will close the material loop (i.e. we remain in contact with and responsibility for the product and therefore the resources)</i>
To what degree will the offerings in the PSS be integrated into existing solutions the customer has?	<input type="checkbox"/> <i>Core benefit alone – no integration</i> <input type="checkbox"/> <i>Multiple benefits aggregated</i> <input type="checkbox"/> <i>Multiple benefits integrated</i>

How and where will you create your revenue? (Revenue mechanisms/streams)	<input type="checkbox"/> <i>Transfer of partnership</i> <input type="checkbox"/> <i>Revenue based on per-use</i> <input type="checkbox"/> <i>Revenue based on units consumed</i> <input type="checkbox"/> <i>Revenue of the management of activities (outsourcing)</i> <input type="checkbox"/> <i>Revenue of taking responsibility of the use</i> <input type="checkbox"/> <i>Revenue of the result of the use (performance based)</i>
Do you plan to involve a financial partner to realise the PSS?	<input type="checkbox"/> <i>No, this is not necessary</i> <input type="checkbox"/> <i>We will act as financial partner to the customer</i> <input type="checkbox"/> <i>Yes, we will most likely need to include a financial partner</i>
What key internal resources will your PSS value proposition require investment in?	<input type="checkbox"/> <i>New/extended distribution channels</i> <input type="checkbox"/> <i>Customer relationships</i> <input type="checkbox"/> <i>Physical (property, machinery)</i> <input type="checkbox"/> <i>Infrastructural (e.g. PLM system, CRM system, database, web portal)</i> <input type="checkbox"/> <i>Intellectual (brand patents, copyrights, data)</i> <input type="checkbox"/> <i>Human</i> <input type="checkbox"/> <i>Financial</i>
What key activities do the value propositions require?	<input type="checkbox"/> <i>Customer relationships</i> <input type="checkbox"/> <i>Production</i> <input type="checkbox"/> <i>Problem solving</i> <input type="checkbox"/> <i>Platform/network creation</i>

What costs are related to the offerings?	<p><i>What are the most important costs inherent in the business model?</i></p> <p><i>Which key resources are most expensive?</i></p> <p><i>Which key activities are most expensive?</i></p>
<p>Who are the key partners or collaborating actors?</p> <p>What characterises the relationship type for the collaboration?</p>	<p><input type="checkbox"/> <i>Suppliers</i></p> <p><input type="checkbox"/> <i>Distributors</i></p> <p><input type="checkbox"/> <i>Customers</i></p> <p><input type="checkbox"/> <i>Customers' suppliers</i></p> <p><input type="checkbox"/> <i>Customers' customers (end-users)</i></p> <p><input type="checkbox"/> <i>Financial partners</i></p>

## Changing the organisation

How will you solve some of the challenges regarding transition to PSS in the organisation?	<p><i>Employee resistance</i></p> <p><i>CRM systems (or the lack of such)</i></p> <p><i>Collaboration between departments (e.g. product development, marketing and service)</i></p> <p><i>PSS development teams (Do they exist? How to establish such?)</i></p>
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## Results

What do you expect the PSS offering's share of the total turnover?	
How many more customers will the PSS result in?	<i>New customers</i> <i>Existing customers retained due to the PSS</i>
How much will the PSS offering increase service sales? ...and service revenues?	
By how much will the PSS offering increased profit per customer?	

You can find this Self Assessment Check in digital form here: [www.dtu.dk/proteus](http://www.dtu.dk/proteus)

This Self Assessment Check has been created on the basis of extensive empirical research into PSS, plus inspiration from the following literature sources:

- Business Model Canvas (Osterwalder, 2004)
- PSS Morphology matrix (Tan and McAloone, 2006)
- Open service innovation concept map (Chesbrough, 2011)

**Chesbrough, H.** 2011. *Open Services Innovation: Rethinking Your Business to Grow and Compete in a New Era*. Jossey-Bass.

**Tan, A. and T.C. McAloone.** 2006. "Characteristics of Strategies in Product/Service-System Development." 9th International Conference on Design: DESIGN 2006, 1435-42.

**A. Osterwalder; Y. Pigneur; C. L. Tucci,** 2005. "Clarifying Business Models, Origins Present, and Future of the Concept." Communication of the Association for Information Systems, 16, 25.



The transformation process towards a PSS-oriented company is described through the presentation of three best practice cases. Each case describes motivations, challenges, business models and PSS offerings



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